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09/835,029	04/12/2001	Yuji Kawase	P5740a	5108

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EXAMINER	
DU, THUAN N	

ART UNIT	PAPER NUMBER
2116	8

DATE MAILED: 04/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application N . 09/835,029	Applicant(s) KAWASE, YUJI	
	Examiner Thuan N. Du	Art Unit 2116	

-- The MAILING DATE of this communication app ars on the c ver sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 April 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-46* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4-33 and 36-46* is/are rejected.

7)☒ Claim(s) *2,3,34 and 35* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Pri rity under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *6,7*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. It is hereby acknowledged that the following papers have been received and placed of record in the file: Priority Documents (dated 6/25/01), IDS (dated 6/25/01) and Supplemental IDS (dated 10/25/02).

2. Claims 1-46 are presented for examination.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 4, 5, 15-17, 23-25, 27, 33, 36 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jacobson et al. [Jacobson] (U.S. Patent No. 5,583,410) (U.S. Patent No. 5,583,410 was submitted by applicant).

5. Regarding claims 1 and 33, Jacobson teaches a drive mechanism control apparatus comprising:

a driver [Fig. 1B; driver 90AB/90CD];

a drive controller in communication with the driver [Fig. 1B; controller 86];

a data generator for generating control data (step table 22) for controlling the driver [col. 2, lines 9-17; col. 3, lines 1-3], and for generating timing data for controlling output timing of the control data (step time table 12) to the drive controller [col. 1, line 67 to col. 2, line 9], wherein

the drive controller controls operation of the driver based on the transmitted control data [col. 2, lines 10-23];

a first storage medium for storing the timing data [Fig. 1A; memory 10];

a second storage medium for storing control data [Fig. 1A; memory 20];

a timer (timer 60) for starting a timing operation upon receipt of timing data [col. 2, lines 6-7; col. 3, lines 29-31], and for outputting a time-up signal (trigger signal) when a time specified by the received timing data elapses [col. 2, lines 8-9; col. 3, lines 31-33];

a first direct memory access (40A) for reading the timing data from the first storage medium [Fig. 1A], and for sending the read timing data to the timer when activated by a specific signal [col. 3, lines 29-43; col. 4, line 36 et seq.];

a second direct memory access (40B) for reading control data from the second storage medium [Fig. 1A], and for sending the read control data to the drive controller when the time-up signal is received from the timer [Fig. 1B; col. 4, line 36 et seq.].

Jacobson does not explicitly use a single storage medium for storing both the timing signal and control signal. However, Jacobson clearly suggests that a single memory device could be used in place of the two separate memory devices as described [col. 2, lines 34-38]. Therefore, one of ordinary skill in the art would have recognized that it would have been obvious to modify Jacobson's system by replacing the two separate memory devices by a signal memory device. The modified system would operate in the same manner as the system taught the Jacobson but it would utilize less hardware for cost saving.

6. Regarding claims 4 and 36, Jacobson teaches the apparatus further comprising a stepping motor (stepper motor 30AB/30CD) [Fig 1B], wherein the timing data comprises timing data for

controlling a phase change timing of the motor [col. 2, lines 2-5], and the control data comprises phase pattern data that is set when the motor phase changes and phase current data for controlling current supplied to the motor when the motor phase changes [col. 2, lines 10-17].

7. Regarding claims 5 and 37, Jacobson teaches that the data generation generates basic timing data, phase pattern data, and phase current data for use during motor acceleration, deceleration, and constant speed operation [col. 2, lines 1-2].

8. Regarding claims 15-17, since they recite method of operating of the apparatus defined in the apparatus claims, they are rejected accordingly based on the rejection of the apparatus claims.

9. Regarding claims 23-25 and 27, Jacobson teaches the claimed apparatus and method steps. Therefore, Jacobson teaches the computer program to implement the claimed apparatus and method steps.

10. Claims 6-14, 18-22, 26, 28-32 and 38-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jacobson et al. [Jacobson] (U.S. Patent No. 5,583,410) and Stephenson (U.S. Patent No. 5,140,340).

11. Regarding claims 6, 18, 26 and 38, Jacobson does not explicitly teach the timing data and control data is used for controlling a head drive.

Stephenson teaches a system for automatically controlling both stepping motor (stepper motor 22) and head drive (print head 8) by a controller (printer controller 20) [col. 4, lines 42-45].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Jacobson's system to be used for controlling both stepping motor and head drive as taught by Stephenson because they both teach a system for controlling stepping motor.

12. Regarding claims 7 and 39, Jacobson teaches the invention as described in #5 above. Jacobson does not explicitly teach the apparatus including a position detector and a drive confirmation unit.

Stephenson teaches a system including:

a position detector (position sensor 16) for outputting a position detection signal [col. 6, lines 5-7] when an operating part (receiver 12) of the drive mechanism reaches a first reference position [col. 5, line 63 to col. 6, line 5]; and

a drive confirmation unit for computing a logical operating position of the drive mechanism from the sent control data, for confirming drive mechanism operating status by comparing the logical operating position with the actual operating position based on the position detect signal, and for outputting an operating error signal when a drive operation error is detected [col. 5, line 63 to col. 6, line 5; col. 6, lines 24-35].

It would have been obvious to one of ordinary skill in the art at the time of the invention to implement the position detector and drive confirmation unit taught by Stephenson into Jacobson's system because they both teach a system for controlling stepping motor. The implementation would increase the reliability of the system because the position errors would be minimized.

13. Claims 8-14 and 40-46 are directed to apparatuses implementing the drive mechanism apparatus of claims 7 and 39. As stated above, Jacobson and Stephenson teach the invention

substantially as set forth in claims 7 and 39. At the time of the invention, one of ordinary skill in the art would have readily recognized that Jacobson and Stephenson may also teach the implementations of claims 7 and 39 as set forth in claims 8-14 and 40-46. As such, claims 8-14 and 40-46 are rejected under same rationale with respect to claims 7 and 39.

14. Regarding claims 19-22, since they recite method of operating of the apparatus defined in the apparatus claims, they are rejected accordingly based on the rejection of the apparatus claims.

15. Regarding claims 28-32, Jacobson and Stephenson together teach the claimed apparatus and method steps. Therefore, Jacobson and Stephenson together teach the computer program to implement the claimed apparatus and method steps.

Allowable Subject Matter

16. Claims 2, 3, 34 and 35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thuan N. Du whose telephone number is (703) 308-6292. The examiner can normally be reached on Monday-Friday: 9:00 AM - 5:30 PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne H. Browne can be reached on (703) 308-1159.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

The fax number for the organization is (703) 872-9306.

Thuan N. Du
April 21, 2004